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PRESENT AND FUTURE PROGRAMS FOR THE APPLICATION OF REMOTE SENSING IN ARGENTINA

Engineer F. A. Alvarez

Translation of "Programas Presentes y Futuros de Aplicacion de la Teleobservacion en la Republica Argentina," (Paper presented at the United Nations' Regional Seminar on Space Applications organized in preparation for the Second United Nations' Conference on the Exploration and Utilization of Outer Space for Peaceful Purposes, Quito, Ecuador, 19-23 April 1982) (UNISPACE 82), 1982, pp 1-6.



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16. Abstract The paper summarizes the activities carried out at the Remote Sensing Center of the National Space Research Commission of Argentina, including reception and processing of satellite data, applications, research and training.					
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PRESENT AND FUTURE PROGRAMS FOR THE APPLICATION OF REMOTE SENSING IN ARGENTINA

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Introduction

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The National Space Research Commission, an organization depending on the Air Force is responsible for the development and promotion of remote observation in the Argentine Republic.

This responsibility is fulfilled by the Center of Remote Sensors, one of the centers which constitute the National Commission.

The activities developed in this center are not the only ones in the country, but this technology is used also in other official and private organizations.

This paper describes briefly the present and future programs and plans accomplished by the Center of Remote Sensors, and divided according to the different areas which it covers, specifically:

- 1) Reception and Processing of Satellite Data
- 2) Applications
- 3) Research
- 4) Training

Reception and Processing of Satellite Data

The LANDSAT Satellite Receiving and Processing Stations, one of them located in Mar Chiquita (Province of Buenos Aires), at 400 km. from the Capital Federal, where the second one is found, depend on the Center of Remote Sensors.

The HDDT recorded in Mar Chiquita are transmitted by air to the processing station where the CCT and the different types of photographic

*Numbers in the margin indicate pagination in the foreign text

products are generated.

These stations are in operation since 1981, satisfying the requirements of the national and foreign users.

The following projects are in the development in this area, besides /2 the normal production projects:

- 1) Improvement of the geographic location of pictures, using ground control points.
- 2) Development of a more elaborate system than the present one for quality control of digital products.
- 3) Planning and control of production by computer.
- 4) Creation of regional centers for product distribution.

The plan to be implemented in the immediate future consists in the arrangement of the existing installation for the reception and processing in the first stage of LANDSAT D and subsequently for SPOT. Bids have already been called for the reception of MSS of the aforementioned satellite and before the end of May tenders will be invited for the modification of TM.

Applications:

1) Agriculture

In 1979 a program started with the collaboration of the United Nations to develop a method for prediction of crops.

This project is being accomplished jointly with the Secretariat of Agriculture while up to now approximately 3 million U.S. dollars have been invested mainly for equipment, personnel training, material and international advisors.

In 1981 Phase I of the project was completed which gave very good results in the determination of areas in which different plants were grown in pilot regions and they began to develop agrometeor- /3 ological models for calculations of yield.

Phase II which will be completed in 1984 includes the extension of

the evaluation to the entire Pradera Pampeana which includes the provinces of Buenos Aires, Santa Fe and Cordoba, as well as to complete the yield models to achieve the prediction of the production.

2) Forestry

During 1981 a project was started for evaluating the perennial cultivation (tea, tung and mate) in the province of Misiones, by using digital processing.

The latter was completed in March of 1982 and the results showed the feasibility and suitability of the procedure developed. This study was carried out on the request of the Federal Investment Council, national organization in charge of support to the provinces in the development of their resources.

In collaboration with the National Forestry Institute and on its request a pilot project was started for the survey of forest areas with differentiation of forests, and its completion is expected in June of this year. If the results are satisfactory, the procedure developed will be used for establishing the national forest map.

3) Hydrology

A project is being developed in cooperation with the HIDRONOR Company in charge of the operation of dykes in the province of Neuquen for the purpose of determining the snow cover in the basin of the Limay River by using LANDSAT pictures and digital processing. The values obtained will be used in models for the evaluation of /4 volumes of water for the generation of electricity and irrigation.

Thus a study is being developed to determine the contamination and sedimentation of rivers, jointly with the DFVLR of the Federal Republic of Germany. In this case air photography will be used and a multispectral scanner onboard an aircraft, the campaign being planned for the second week of October this year.

4) Geology

A project is being studied which may be implemented this year, whose purpose would be to use LANDSAT pictures as support for petroleum prospection. This project will be executed jointly with the Company of the Estado Yacimientos Petroliferos Fiscales.

Research and Development

The following activities are being developed and completed:

- 1) Data processing. Three years ago they started developing the software needed for the interactive analysis of data, used during 1981 for the work of classification and determination of areas of cultivation in the agricultural program. It is now in the course of further improvement with the addition of modules for:
 - a) registration of pictures of different dates and geometrical corrections of precision.
 - b) filtering, development of the main components and relation of bands.
- 2) Geometrical simulation of satellites of different resolution. /5
- 3) Development of a microsystem of image processing.
- 4) Registration of pictures with different resolution.
- 5) Experimentation, jointly with the DFVLR of Federal Germany of an autoelectronic multispectral scanner.

Training

In the month of June this year they will implement and place at the disposal of users three systems for interactive analysis for the purpose of spreading the use of digital analysis of data coming from satellites for the scanner onboard the aircraft. The main system which will also be used for research missions consists of a VAX 11/700 computer, a COMTAL 1/20 terminal, printers for black and white and color point matrix, disc units with 320 MBytes and Optronics Colormation 4500 equipment.

The following courses and meetings will also be held:

- XVI International Symposium of Remote Sensing Applied to the Environment (CNIE-ERIM) 2-9 June 82, Buenos Aires.
- IV National Symposium of LANDSAT Data Analysis, 22-26 November 82,

Buenos Aires.

- Latin American Course on Applications of Remote Sensing to Environmental Pollution (CNIE-CEA), 18 October to 22 November 1982, Buenos Aires.
- National Courses for Familiarization with Remote Sensors (CNIE-CFI) in the Provinces of Neuquen, Entre Rios and Jujey (dates to be confirmed).

With regard to the training courses mentioned agreements will be made with different universities for the purpose of establishing a /6 permanent training system in the different related areas.

Conclusions

This paper is a summary of the activities which are carried out at the Remote Sensing Center, which undoubtedly will increase as the technology spreads in the country and a considerable increase is already observed in the use of satellite data which makes it probable that there will be increasing requests for the products of LANDSAT station, as also the requirements for advising users on specific problems.

The experience which has already been gathered will help progressively to find the most suitable forms for the establishment of operational programs adapted and applied to the users, in each of the projects being developed. It is a question of achieving the participation of a person for training and arousing interest in this technology.

We believe that remote observation is a tool suitable to satisfy considerable needs for data on the resources of the country, our responsibility is to spread it and teach how to use it.